UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,470	11/17/2008	Hagen Klauk	1433.251.101/14187	9475

25281 7590 12/16/2009

DICKE, BILLIG & CZAJA
FIFTH STREET TOWERS
100 SOUTH FIFTH STREET, SUITE 2250
MINNEAPOLIS, MN 55402

EXAMINER	
LAURENZI, MARK A	
ART UNIT	PAPER NUMBER
2894	

MAIL DATE	DELIVERY MODE
12/16/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,470	KLAUK ET AL.	
	Examiner	Art Unit	
	MARK A. LAURENZI III	2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This 1st Non-Final office action is in response to Application No. 10599470 filed 09-29-2006.

Remarks

Applicant's arguments, filed 09-10-2009 with respect to the rejection of claim 23 by reference Speakman under 35 U.S.C §103(a) have been fully considered and are persuasive.

Accordingly, a proper heading including Speakman for the rejection of claim 23 is provided infra.

Therefore, the non-final rejection as set forth in an Office Action mailed 05-12-2009 has been withdrawn.

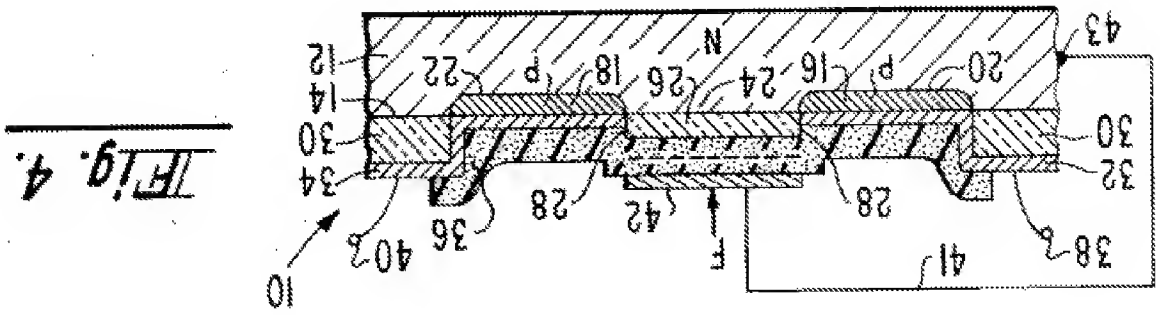
Furthermore, with respect to the Objections applied to claims 24 and 27 by the presently withdrawn Non Final Office Action, have been fully considered and are persuasive. The amended claims cure the previous deficiencies. Therefore, the objections to claims 24 and 27 have been withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17, 19, 21-22, 34 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Vilkomerson U.S. 3,978,508.



Re claim 17, Vilkomerson (e.g. Fig. 4) teaches: a force sensor comprising: a substrate 12; and an organic (elastomer, Abstract) field effect transistor (Title) applied on the substrate, in which a mechanical force (Force, F, col. 4/lls 55-60) acting on the transistor causes a change in its source-drain voltage or its source-drain current (current with flow, col. 4/lls. 60-65) which corresponds to the force and is detected as measurement quantity for the acting force.

Re claim 19, Vildomerson teaches: the force sensor according to claim 17, comprising wherein the substrate is made of a material from a group consisting of glass, ceramic (ceramics, col. 1/lls. 7-8, a conventional material), plastic, a polymer film, metal film or paper.

Re claim 21, Vildomerson teaches: the force sensor according to claim 17, comprising wherein the detected measurement quantity is the drain-source voltage of the organic field effect transistor, a constant gate-source voltage and a constant drain current being present at the transistor at the measurement instant (Vildomerson, current with flow, col. 4/lls. 60-65).

Re claim 22, Vildomerson teaches: the force sensor according to one of claim 17, comprising wherein the detected measurement quantity is the drain current of the organic field effect transistor, a constant gate-source voltage and a constant drain-source voltage being present at the transistor at the measurement instant (Vildomerson, current with flow, col. 4/lls. 60-65).

Re claim 34, Vilkomerson (e.g. Fig. 4) teaches: a force sensor comprising: a substrate 12; and means for providing an organic (elastomer, Abstract) field effect (Title) transistor applied on the substrate, in which a mechanical force (Force, F, col. 4/lls 55-60) acting on the transistor means causes a change in its source-drain voltage or its source-drain current (current with flow, col. 4/lls. 60-65) which corresponds to the force and is detected as measurement quantity for the acting force.

Re claim 36, Vildomerson in view of Horowitz teaches: the force sensor according to claim 34, comprising wherein the substrate is made of a material from a group consisting of glass, ceramic (ceramics, col. 1/lls. 7-8, conventional material), plastic, a polymer film, metal film or paper.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 18, 20, 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vilkomerson and further in view of Gilles Horowitz "Organic Field-Effect Transistors".

Re claim 18, Vildomerson (e.g. Fig. 4) *is explicitly silent with respect to* the force sensor according to claim 17, comprising wherein the organic field effect transistor is a pentacene (an elastomer) transistor having an active layer made of pentacene between its source electrode and its drain electrode.

However, Horowitz teaches: a field effect transistor including an elastomer e.g. pentacene (5.2.2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device including a field effect transistor and active region 36 as disclosed by Vildomerson with the electric field producing means such as the elastomer pentacene as disclosed by Horowitz or more specifically, replace the active region 36 with a layer of pentacene. For the benefit of forming an active region such as an active region comprising pentacene because pentacene may be deposited by pulsed laser deposition which is known to decrease the deposition time (Horowitz, 5.2.2) thus decreasing the time of manufacture.

Re claims 20 and 37, Vildomerson *is explicitly silent with respect to* the force sensor according to Claim 19, comprising wherein the substrate comprises a polymer film having a material from a group consisting of polyethylene napthalate, polyethylene terephthalate, polyimide, polycarbonate and/or polyethene ether ketones.

However, Horowitz teaches: the force sensor according to Claim 19, comprising wherein the substrate comprises a polymer film having a material from a group consisting of polyethylene napthalate, polyethylene terephthalate, polyimide (polyimide substrate, 4.2), polycarbonate and/or polyethene ether ketones.

Furthermore, Horowitz teaches that a polymide substrate is an alternative substrate material.

Therefore, as reasoned from well established legal precedent, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the polymide substrate as taught by Horowitz for the substrate as taught by Vildomerson.

See In re May (CCPA) 136 USPQ 208 (It is our opinion that the substitution of Wille's type seal for the cement of Hallauer in Figure 1 would be obvious to persons of ordinary skill in the art from the disclosures of these references, merely involving an obvious selection between known alternatives in the art and the application of routine technical skills.); In re Cornish (CCPA) 125 USPQ 413; In re Soucy (CCPA) 153 USPQ 816; Sabel et al. v. The Wickes Corporation et al. (DC SC) 175 USPQ 3; Ex parte Seiko Koko Kabushiki Kaisha Co. (BdPatApp&Int) 225 USPQ 1260; and Ex parte Rachlin (BdPatApp&Int) 151 USPQ 56.

Re claim 35, Vildomerson *is explicitly silent with respect to* the force sensor according to claim 34, comprising wherein the organic field effect transistor is a pentacene (an elastomer) transistor having an active layer made of pentacene between its source electrode and its drain electrode.

However, Horowitz teaches: a field effect transistor including an elastomer e.g. pentacene (5.2.2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device including a field effect transistor and active region 36 as disclosed by Vildomerson with the electric field producing means such as the elastomer pentacene as disclosed by Horowitz or more specifically, replace the active region 36 with a layer of pentacene. For the benefit of forming an active region such as an active region comprising pentacene because pentacene may be deposited by pulsed laser deposition which is

known to decrease the deposition time (Horowitz, 5.2.2) thus decreasing the time of manufacture.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vilkomerson U.S. Patent No. 3,978,508 and further in view of Speakman U.S. 2002/0105080 A1.

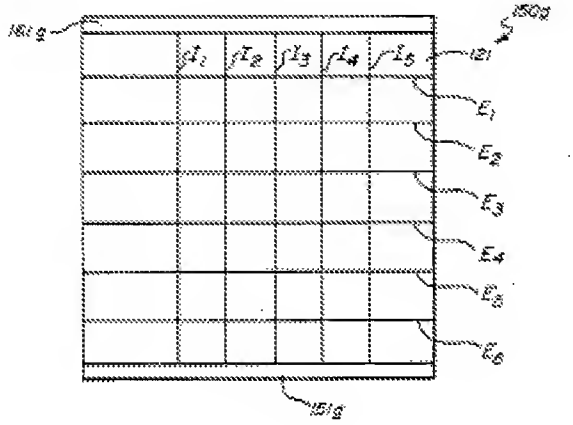
Re claim 23, Vildomerson (e.g. Fig. 4) teaches: a pressure sensor comprising: at least one force sensor comprising a substrate 12, and an organic (elastomer, Abstract) field effect transistor (Title) applied on the substrate, in which a mechanical force (Force, F, col. 4/lls 55-60) acting on the transistor causes a change in its source-drain voltage or its source-drain current (Vildomerson, current with flow, col. 4/lls. 60-65) which corresponds to the force and is detected as measurement quantity for the acting force *but is explicitly silent with respect to* where the substrate is configured as a deformable diaphragm and the measurement quantity corresponding to the bending state of the diaphragm.

However, Speakman teaches: a finger print sensing tactile structures including a flexible substrate [0300] and [0369].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device including a field effect transistor and substrate by Vildomerson with the flexible substrate as disclosed by Speakman where the substrate as taught by Vildomerson is replaced by the flexible substrate as taught by Speakman for the benefit of forming a finger printing device that is able to conform to the shape of a finger upon contacting the finger to the device so as to ensure that more finger surface area is sampled by the device as compared to the surface area measured upon contact between a finger and a device with a rigid support that does not conform to the shape of a finger.

Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vilkomerson U.S. 3,978,508 and further in view of Yaniv et al. U.S. 4,827,085.

FIG. 4



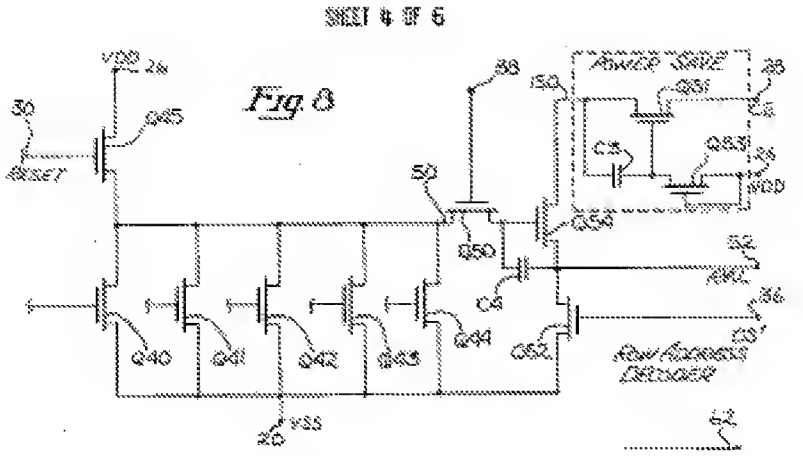
Re claim 24, Vildomerson (e.g. Fig. 4) teaches: one or more force (Force, F, col. 4/lls 55-60) sensors comprising a substrate 12, and an organic (elastomer, Abstract) field effect (Title) transistor applied on the substrate, in which a mechanical force acting on the transistor causes a change in its source-drain voltage or its source-drain current (current with flow, col. 4/lls. 60-65) which corresponds to the force and is detected as measurement quantity for the acting force *but is explicitly silent with respect to* a one- or two-dimensional position sensor for measuring the position of a mechanical force action along a line or within an area using a multiplicity of force sensors comprising: a substrate, and an organic field effect transistor applied on the substrate, in which a mechanical force acting on the transistor causes a change in its source-drain voltage or its source-drain current which corresponds to the force and is detected as measurement quantity for the acting force and where the force sensors are arranged at regular distances from one another in a form of a one- or two-dimensional matrix on a common substrate.

However, Yaniv (e.g. Fig. 4) teaches a position sensor (sensitive position sensor, col. 2/lls. 19-21) device including an array (col. 15/lls. 60-68) devices and where the force sensors are arranged at regular distances from one another in a form of a one- or two-dimensional matrix on a common substrate (Shown in Fig. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device including a force sensing device by Vildomerson with the position sensor device in array configuration as taught by Yaniv for the benefit of forming an organic field effect device that can be used to detect and determine the precise location of a force (col. 11/lls 65-68 and col. 12/lls. 1-2) e.g. a finger touch. *(Note: one and two dimensional devices do not exist however, for examining purposes the terms: one dimensional and two dimensional are assumed to be directed towards the common language of straight and flat, respectively.)*

Re claim 25, Vildomerson in view of Yaniv teaches: the sensor according to claim 24, comprising wherein a driving and measuring (Vildomerson, col. 4/lls. 60-65) unit is connected to the drain or source terminals of all the field effect transistors for driving and detecting the position of the force action.

Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vilkomerson in view of Yaniv and further in view of Mehta et al. U.S. 3,795,898.



Re claim 26, Vildomerson in view of Yaniv teaches: the sensor according to Claim 25, comprising: where the organic field effect transistors are arranged in rows and columns (Yaniv, Fig. 4); *but is explicitly silent with respect to* a driving and measuring unit is connected to the drain or source terminals of all the columns for the purpose of driving and detecting the column position of the force action and a row decoder is connected or can be connected to the gate terminals of the organic field effect transistors for row-by-row selection and driving of the organic field effect transistors.

However, Mehta teaches: terminals connected to the gates of device Q40 in the row address decoders.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the organic field effect transistor including an array of devices as taught by Vildomerson in view of Yaniv with the device as taught by Mehta that includes connected gate terminals in the row address decoders for the benefit of forming an organic field effect device that can be used to detect and determine the precise location of a force (col. 11/lls 65-68 and col. 12/lls. 1-2) e.g. a finger touch.

Re claim 27, Vilkomerson teaches: a driving and measuring (Vildomerson, col. 4/lls. 60-65) unit connected to the drain or source terminals of the organic field effect transistors in all columns for the purpose of driving and detecting the column position of the force action *but is explicitly silent with respect to* a fingerprint sensor comprising: a multiplicity of force sensors according to claim 17 that are arranged on a common substrate at regular distances in the form of a two-dimensional matrix subdivided into rows and columns and a row decoder connected to the gate terminals of the organic field effect transistors of all the rows for row-by-row selection and detection of the position of the force action in the row direction.

However, Yaniv (e.g. Fig. 4) teaches a position sensor (sensitive position sensor, col. 2/lls. 19-21) device including an array (col. 15/lls. 60-68) devices and where the force sensors are arranged at regular distances from one another in a form of a one- or two-dimensional matrix on a common substrate (Shown in Fig. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device including a force sensing device by Vildomerson with the position sensor device in array configuration as taught by Yaniv for the benefit of forming an organic field effect device that can be used to detect and determine the precise location of a force (col. 11/lls 65-68 and col. 12/lls. 1-2) e.g. a finger touch. *(Note: one and two dimensional devices do not exist however, for examining purposes the terms: one dimensional and two dimensional are assumed to be directed towards the common language of straight and flat, respectively.)*

Yet Vilkomerson in view of Yaniv *is explicitly silent with respect to* a row decoder connected to the gate terminals of the organic field effect transistors of all the rows for row-by-row selection and detection of the position of the force action in the row direction.

However, Mehta teaches: terminals connected to the gates of device Q40 in the row address decoders.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the organic field effect transistor including an array of devices as taught by Vildomerson in view of Yaniv with the device as taught by Mehta that includes connected gate terminals in the row address decoders for the benefit of forming an organic field effect device that can be used to detect and determine the precise location of a force (col. 11/lls 65-68 and col. 12/lls. 1-2) e.g. a finger touch.

Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vilkomerson in view of Yaniv and Mehta as applied to claim 27 above, and further in view of Thompson U.S. 2006/0138599 A1.

Re claims 28-29, Vilkomerson in view of Yaniv and Mehta *is explicitly sillent with respect to* the fingerprint sensor according to Claim 27, comprising: at least one perspiration-resistant protective layer provided as protection against the ingress of water and organic contaminations above the active layer of the organic field effect transistors.

However, Thompson teaches the use of perfluorinated materials as a coating or IDL layer [0010].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device, including a passivation layer as disclosed by Vilkomerson in view of Yaniv and Mehta with the coating or layer, comprising a perfluorinated material as taught by Thompson where the passivation layer is replaced with the perfluorinated layer so as to acquire the benefit of forming a semiconductor device by a method that does not

involve deposition but rather can be applied by solvent based techniques which decreases the time as well as expense of the manufacturing process.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vilkomerson in view of Yaniv, Mehta, Thompson as applied to claim 29 above and further in view of S.T. Cui. "Intermolecular potentials and vapor-liquid phase equilibria of perfluorinated alkanes".

Re claim 30, Vilkomerson in view of Yaniv, Mehta and Thompson *is explicitly silent with respect to* the fingerprint sensor according to claims 29, where the perfluorinated material is perfluorohexadecane.

However, S.T. Cui teaches that perfluorohexadecane is a perfluorinated material (title and 2. "Models and simulation details").

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device including a perfluorinated material as taught by Vilkomerson in view of Yaniv, Mehta and Thompson with a perfluorinated material such as perfluorohexadecane as taught by Cui for the benefit of incorporating a material that can suppress the rate of particle exchange because said material has a low particle exchange rate.

Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vilkomerson in view of Yaniv, Mehta and Thompson as applied to claim 28 above and further in view of Reamey et al. U.S. 5,543,944.

Re claim 31, Vilkomerson in view of Yaniv, Mehta, and Thompson is *explicitly silent with respect to* the fingerprint sensor according to Claim 28, comprising wherein a first

protective layer includes a hydrophobic material and a second protective layer includes a hydrophilic polymer which acts as a diffusion barrier against lipophilic contaminants.

However, Reamey teaches the use of hydrophilic and lipothilic materials as an encapsulating material (col. 7/lls. 25-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device including a passivation layer as taught by Vilkomerson in view of Yaniv, Mehta, and Thompson with the hydrophilic/ lipothilic materials as taught by Reamey for the benefit of forming an encapsulated device which is resistant to contamination, e.g. water.

Re claims 32-33, Vilkomerson in view of Yaniv, Mehta, Thompson, Cui and Reamey *is explicitly silent with respect to* the fingerprint sensor according to Claim 31, comprising wherein the first protective layer covers the second protective layer and the fingerprint sensor according to Claim 31, comprising wherein the second protective layer covers the first protective layer.

However, it would have been obvious to one or ordinary skill in the art at the time the invention was made to rearrange the protective layers, since part relocation of a device where said relocation would not modify the operation of the device involves only routine skill in the art and is unpatentable. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) and In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARK A. LAURENZI III whose telephone number is (571)270-7878. The examiner can normally be reached on Monday through Friday 8am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Nguyen can be reached on 571-272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARK A. LAURENZI III/
Examiner, Art Unit 2894

/Kimberly D Nguyen/
Supervisory Patent Examiner, Art Unit 2894

12/11/2009 4:21 PM